

### Remarks

Upon entry of this paper, claims 44, 46, 47, 49-58, 60-67 and 69-87 are pending in the present application, with claims 69-81 and 83-85 withdrawn from consideration. Claims 44, 54-56, 58, 63, 67, 82 and 86 are amended herein, claim 87 is newly added, and claims 45, 48, 59 and 68 are cancelled, all without prejudice or disclaimer. No new matter is added by the amendments made herein.

#### Claim Rejections under 35 USC §112, second paragraph, for indefiniteness

In the Office Action, claims 44, 45, 50, 55, 58 and 68 are apparently rejected under 35 USC §112, second paragraph, for failing to point out and distinctly claim the subject matter considered to be the invention.

Claims 45 and 68 have been cancelled herein without prejudice or disclaimer. Claim 44 has been amended to delete the phrase "such as," claims 44, 50, 54, 55, 63, 82 and 86 have been amended to delete the phrase "at least" from "at least substantially," and claim 58 has been amended to delete the word "preferably."

Accordingly, Applicant respectfully requests reconsideration and withdrawal of the rejection of claims 44, 45, 50, 55, 58 and 68 under 35 USC §112, second paragraph.

#### Claim Rejections Based on USPAP 2003/0190214 A1

In the Office Action, the Examiner rejected claims 44-50, 54, 55, 57, 59-63 and 64-68 under 35 USC §102(b) as allegedly being anticipated by Babej *et al.* (USPAP 2003/0190214, hereinafter "Babej"), and rejected claims 51, 56-58 and 63 under 35 USC §103(a) as allegedly being unpatentable over Babej. Applicant respectfully requests reconsideration and withdrawal of the rejections in view of the following traversing arguments.

There are several differences between the hollow body elements, methods and apparatus disclosed in Babej and those of the present application.

Initially, Applicant notes that claim 44 (and indeed all the independent claims of the present application) specifically requires the elongate section of material that is used as a starting point for the manufacture of the hollow body elements to have a

rectangular cross-section. For example, looking at the corresponding section of Babej, it can be seen that it has either two bars or two grooves at or adjacent the two longitudinal edges of the section at what can be considered to be the second broad side of the section. Thus, the section of Babej is not a rectangular section in the sense of the present invention. The bars or grooves of Babej (bars 14, 16 in Fig. 2E or grooves 223, 225 in Fig. 8) have undercut sidewalls and are intended to facilitate the retention of the element to a sheet metal component, with sheet metal material being forced into the respective undercuts. Moreover, because these undercuts extend along the longitudinal sides of the section and thus of the respective elements, they also prevent rotation of the element relative to the sheet metal component. In the present invention these bars are dispensed with. This has the advantage that the starting section is less complicated and easier to produce.

Looking carefully at the figures of Babej, one will see that all embodiments of the nut elements shown there have a cylindrical recess at the first broad side (the top side in most of the drawings) which is of larger diameter than the outer diameter of the female thread in the nut element.

In contrast, the nut elements of the present invention do not have such a cylindrical recess. It is true that a cylindrical recess is produced during the manufacture of the nut elements. However, the cylindrical recess that is produced has, in the present invention, an internal diameter which corresponds to the internal diameter of the inner space provided in the hollow projection in the second broad side of the section. The web of material remaining between the base of the cylindrical recess (the recess base) and the base of the inner space of the hollow cylindrical projection (the space base) is subsequently punched out with a punch. The punch has a diameter substantially the same as the inner diameter of the cylindrical recess and the inner diameter of the hollow space of the hollow cylindrical projection, and a thread is then cut into the material starting from the first broad side and going right through the second broad side into the hollow cylindrical projection. Once this hole is punched, the cylindrical recess is effectively no longer there and this is in stark contrast to the cylindrical recess of Babej which remains and is clearly visible in the final element. Since this cylindrical recess has been omitted, the nut element can actually be made

smaller (for a given length of thread) by using a rectangular section of smaller depth. This facilitates the shaping work which has to be done in the progressive tool used to manufacture the hollow body elements. Moreover, by contriving a cylindrical recess in this manner, it has surprisingly proved possible to make the cylindrical hollow projection which now has an inner diameter corresponding to the inner diameter of the cylindrical recess rather than an outer diameter corresponding to the inner diameter of the cylindrical recess in Babej. This manufacturing process is aided by the recess (the ring recess) provided around the hollow cylindrical projection which is only present in Babej in the Fig. 9 and 10 reference (but there in combination with the not strictly rectangular cross-section of the section and the cylindrical recess in the first broad side of larger diameter).

These distinguishing features, *i.e.*, the use of a (strictly) rectangular section, the formation of the hollow cylindrical projection with an inner diameter corresponding to the inner diameter of the cylindrical recess in the first broad side of the section (formerly claim 45) and the presence of a ring recess around the hollow cylindrical projection together with the use of a punch having a diameter which at least substantially corresponds to said diameter of said recess and to said inner diameter of said hollow projection (formerly claim 48) are essential features of all the independent claims. These features are, however, generally not present in Babej (with the exception of the ring recess in the Fig. 9 and 10 embodiment--although the other two distinctions are also present in comparison to this embodiment) and therefore the reference does not anticipate these features.

Applicant notes that the Examiner rejected claim 1 as being anticipated by Babej. However, it is respectfully submitted that the Examiner did not pay due weight to the statements in original claim 1 of the present application to the effect that the section is rectangular in cross-section. Moreover, the amended claim 44 now includes the feature of original claim 45, which specifically requires the diameter of the cylindrical recess and the inner diameter of the hollow cylindrical projection to be at least substantially the same. The Examiner indicated that this is also known from Babej, but again, this is not correct, as can be seen from a simple viewing of the figures of Babej. In Babej, the outer diameter of the hollow cylindrical projection is essentially the same as the inner

diameter of the cylindrical recess, but the inner diameter of the hollow cylindrical projection is not the same as the inner diameter of the cylindrical recess, as required by amended claim 44.

Applicant respectfully submits that the combination of features rectangular section, cylindrical recess having an inner diameter corresponding to the inner diameter of the inner space of the hollow cylindrical projection and the presence of a ring recess around the hollow cylindrical projection as well as the diameter of the punch corresponding to the inner diameter of the cylindrical recess and that of the hollow cylindrical projection (formerly claim 48), do in fact make the present invention patentable over Babej. It is not evident to the person skilled in the art, starting from the applied publication, how he should adopt such a combination of features to achieve significant production advantages. As noted above, the rectangular section is less expensive than the profiled section used in the applied reference. The fact that the height of the section can be reduced for a given thread length also reduces the deformation work which has to be carried out in the progressive tool which makes the lifetime of the progressive tool longer and also reduces the danger of elongation of the section in each working station of the progressive tool. This is a serious problem when manufacturing nut elements from continuous sections because, depending on the tolerances on hardness and size, the operations which are supposed to be carried out in a completely synchronized manner with proper alignment in each working station can become misaligned with subsequent tool failure and manufacture of faulty products, which is unacceptable in industrial processes which have to work hundreds of thousands if not millions of times before the tooling needs servicing.

Additionally, the Examiner considers the remaining claims in light of the applied reference. However, Applicant respectfully submits that the passages and drawings cited by the Examiner do not seem to bear any relationship to the remarks made by the Examiner. More specifically, Applicant courteously traverses the Examiner's specific comments in the various sections of the Office Action with regard to the teachings in the applied reference, as follows:

Section 13 – claim 45 (now incorporated in claim 44)

The Figs. 2A and 2B referred to by the Examiner do not show the diameter of the cylindrical recess and the inner diameter of the hollow cylindrical projection being made at least substantially the same. Accordingly, Applicant respectfully submits that claim 44 is patentable over Babej.

Section 14 – claim 46

Applicant respectfully submits that, because claim 46 is depend upon claim 44, claim 46 is patentable over Babej.

Section 15 – claim 47

Applicant cannot locate any reference to a chamfered run-out edge 23 in paragraph 32 of Babej. Accordingly, Applicant respectfully submits that claim 47 is patentable over Babej.

Section 16 – claim 48 (now incorporated in claim 44)

As mentioned above, the inner diameter of the recess and the inner diameter of the hollow projection are the same and the web is pierced with a punch having essentially the same diameter so as to form a long cylindrical passage in which a thread can be produced. Not only does paragraph 32 of Babej not refer to the piercing process, but the aperture that is produced by piercing the web in Babej does not have a diameter which corresponds to the inner diameter of the cylindrical recess. Accordingly, Applicant respectfully submits that claim 48 is patentable over Babej.

Section 17 – claim 49

The Examiner stated that during the upsetting process the free end of the hollow cylindrical projection is provided at an outside with a chamfer 23, and again reference is made to paragraph 32. However, as noted above, Applicant does not find the word "chamfer" at all in paragraph 32 of Babej, and the disclosure of paragraph 32 does not actually relate to the shape of the hollow cylindrical projection. Moreover, it does not

appear that there is reference numeral 23 in Babej. Accordingly, Applicant respectfully submits that claim 49 is patentable over Babej.

#### Section 18 – claim 50

The Examiner refers to Figs. 2A to 2F and Fig. 17A in connection with the ring recess and in particular its base region. The reference numerals 36 or 216 must refer to the reference since these reference numerals are not used in the connection with the recess in the applied reference. In Babej, 36 is actually the projecting cylindrical portion in Figs. 2A to 2F, and 216 is a sidebar in the embodiment of Fig. 8. Thus, Applicant respectfully asserts that it is unknown what the Examiner means when referring to the recess. Moreover, the Figs. 2A to 2F embodiments do not show any recess at all (it has to be remembered that the items labeled 14 and 16 in Figs. 2A to 2F of the reference are not a circularly extending wall but rather two elongate bars provided at the elongate sides of the section and are shown only in cross-section in Figs. 2A to 2F). Fig. 17A of Babej relates to the die button used to insert the hollow body element into a sheet metal component, and has nothing to do with the actual shape of the hollow body component or the method of producing it. Accordingly, Applicant respectfully submits that claim 50 is patentable over Babej.

#### Section 19 – claim 52

The Examiner refers to Fig. 4E to support the assertion that the transition from the ring-shaped region of the ring recess into the conical surface is rounded. However, the Fig. 4E embodiment of the applied reference does not have a ring recess. The only element with a recess is that shown in Figs. 9A to 9E and 10. However, Applicant respectfully points out that claim 52 depends on claim 50, which requires the provision of a recess with a ring-like base region which stands at least approximately in a plane parallel to the first and second broad sides. Applicant asserts that the recess shown in Figs. 9A and 9E and 10 does not have such a base region, rather simply a radius between the conical surface and the outer surface of the piercing projection, which is not the same thing. Additionally, claim 52 also depends from claim 50, and ultimately from claim 44. Accordingly, Applicant respectfully submits that claim 52 is patentable over Babej.

Section 20 – claim 53

Claim 53 requires a run-out of the conical surface of the ring recess into the second broad side to be rounded. Again, the Examiner referred to Fig. 4E to support the assertion that this element was taught by the applied reference. However, Fig. 4E of Babej does not show any recess at all. If Fig. 9A to 9E or Fig. 10 was meant, then it is difficult to see from the figure whether a rounded transition is actually present. In practice it probably would be. Applicant also points out that claim 53 is dependent upon claim 50. Accordingly, Applicant respectfully submits that claim 53 is patentable over Babej.

Section 21 – claim 54

The Examiner referred to paragraphs 9 to 10 to support the allegation of unpatentability of claim 54, but these paragraphs do not seem to have anything to do with the features claimed in claim 54. Additionally, claim 54 is dependent upon claim 44. Accordingly, Applicant respectfully submits that claim 54 is patentable over Babej.

Section 22 – claim 55

Claim 55 is dependent upon claims 54 and 44, and is patentable for the same reasons as these claims are patentable over Babej.

Section 23 – claim 59

Claim 59 was cancelled herein without prejudice or disclaimer.

Sections 24, 25, 26, 27, 28, 29 and 30 – claims 61 - 67

The limitations of these claims all relate to the provision of features providing security against rotation. Babej simply does not have any such features. It does not actually need them because it relies on the bars mentioned above to provide security against rotation. Applicant asserts that it is not essential for the element of the present invention to have discrete features providing security against rotation arranged in the region of the conical recess. It is possible to install an element without such features into a panel of sheet metal in such a way that it is partially recessed into the sheet metal

and this itself provides security against rotation. The undercut piercing section provides security against push-out, *i.e.*, axially directed forces (axially relative to the threaded bore), which try to release the element from the sheet metal component, for example when a bolt element is pushed against the nut element when attaching another component to the sheet metal part. Accordingly, Applicant respectfully submits that claims 61-67 are patentable over Babej.

#### Section 31 – claim 68

Independent claim 68 has been cancelled herein without prejudice or disclaimer, and is presented herein in amended form as new independent claim 87. This claim relates to the method of manufacturing a hollow body element as shown in Figs. 12A to 12D of the present application, where it can be seen that the recess is in fact a polygonal recess, in actual fact here a square recess, with a plurality of surfaces set at different angles to the central longitudinal axis of the element. These limitations are clearly set forth in new claim 87, and Applicant respectfully asserts that Babej is not relevant to new claim 87 since Babej does not have any such embodiments with a polygonal recess. Accordingly, Applicant respectfully submits that claim 87 is patentable over Babej.

#### Section 33

Applicant respectfully confirms that the subject matter of the various claims was commonly owned at the time the invention covered therein were made.

#### Section 35 – claim 51

The Examiner asserted that Fig. 13 of Babej shows a cone angle in a range between 60° and 120° for the conical surface of the ring recess. However, in actual fact, Fig. 13 does not show either a ring recess or a conical surface, and therefore, Applicant submits that there is no support for the Examiner's assertion. Accordingly, Applicant respectfully submits that claim 51 is patentable over Babej.



Section 36 – claim 56

The Examiner asserted that, in relation to claim 56, in paragraph 34 of Babej, there is some reference to the cone angle of the thickened hollow cylindrical projection. However, paragraph 34 of Babej has nothing whatever to do with the cone angle under discussion, but refers instead to the angle  $\alpha$  shown in Fig. 1, *i.e.*, the angle of the inclined elongate flank of the bar of the section which is used as the starting point for the manufacture of hollow body elements in Babej. Accordingly, Applicant respectfully submits that claim 56 is patentable over Babej.

Section 37 – claim 56

This rejection presumably relates to claim 56, which claims that the cone angle of the thickened region of the hollow cylindrical projection lies in the range of 30° and 70°. The Examiner asserted that Babej is relevant, and referred specifically to Fig. 13 of that reference. However, Fig. 13 of Babej does not show a piercing projection or have any relevance to the cone angle of the piercing projection. Accordingly, Applicant respectfully submits that claim 56 is patentable over Babej.

Section 38 – claim 57

The Examiner asserted that the limitations of claim 57 are taught by paragraph 10 of Babej. However, paragraph 10 of Babej does not have anything to do with the shape of the hollow cylindrical projection. Accordingly, Applicant respectfully submits that claim 57 is patentable over Babej.

Sections 39 and 40 – claim 58

The Examiner suggests, in relation to claim 58, that the ring recess is executed with an outer diameter which is only made somewhat smaller than the smallest transverse dimension of the hollow body element, and indeed quotes a range for this dimension of 0.25 to 1 mm. Applicant respectfully traverses the Examiner's statement, because this feature is not disclosed in Babej. All the embodiments show bars at two longitudinal sides of the element, and indeed, sometimes bars with grooves immediately adjacent them, and the conical recess finishes inboard of these bars or grooves. Thus, the

dimension in Babej will be significantly larger than the values quoted in claim 58. Accordingly, Applicant respectfully submits that claim 58 is patentable over Babej.

#### Section 41 – claim 63

The Examiner again raises an objection to the features providing security against rotation in claim 62 and refers to paragraphs 40 to 42 of Babej. However, these paragraphs have nothing to do with ribs providing security against rotation which bridge the undercut of the hollow cylindrical projection (this is stated in claim 62 upon which claim 63 depends), and no such ribs are shown in Babej. Accordingly, Applicant respectfully submits that claim 63 is patentable over Babej.

#### Section 42 – claim 63

This objection presumably also refers to claim 63 (although the Examiner does not specifically state this). Again, in the absence of such ribs in Babej, the objection does not seem to be soundly based. Accordingly, Applicant respectfully submits that claim 63 is patentable over Babej.

#### Conclusion

Based on the foregoing amendments and remarks, Applicant respectfully submits that the present invention is patentable, and Applicant requests withdrawal of all of the rejections. It is respectfully requested that a Notice of Allowance be issued.

It is believed that all of the pending issues have been addressed. However, the absence of a reply to a specific rejection, issue or comment does not signify agreement with or concession of that rejection, issue or comment. In addition, because the arguments made above may not be exhaustive, there may be reasons for patentability of any or all pending claims (or other claims) that have not been expressed. Finally, nothing in this reply should be construed as any intent to concede any issue with regard to any claim, except as specifically stated in this reply, and the amendment of any claim does not necessarily signify concession of unpatentability of the claim prior to its amendment.

The Examiner is invited to direct any questions to the undersigned at the below-listed contact numbers.

Respectfully submitted,  
Jiri BABEJ

Handwritten signature of Abraham Herskovitz in black ink, consisting of a stylized first name and a more legible last name.

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Abraham Herskovitz  
Reg. No. 45,294

/Eugene Rzucidlo/  
Reg. No. 31,900

HERSHKOVITZ & ASSOCIATES, LLC  
2845 Duke Street  
Alexandria, VA 22314  
Telephone 703-370-4800  
Facsimile 703-370-4809  
Email patent@hershkovitz.net

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